

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A method of forming a metal pattern, comprising the steps of:
 - (I) forming on a substrate a polymer layer in a pattern form in which by using a compound polymer having which has a polymerizable group and a functional group that interacts with an electroless plating catalyst or a precursor thereof is chemically bonded directly to the substrate in a pattern form;
 - (II) adding the electroless plating catalyst or precursor thereof to the polymer layer; and
 - (III) forming a metal layer in the pattern form by electroless plating.

2. (currently amended): The metal pattern forming method according to Claim 1, wherein the step (I) further comprises:
 - a step of forming a polymerization initiating layer in which a polymer having, on a side chain thereof, a crosslinking group and a functional group having polymerization initiating capability is immobilized by a crosslinking reaction on a base material; and
 - a step of forming a polymer the polymer layer in the pattern form onto the polymerization initiating layer in which by using a compound polymer having which has a polymerizable group and a functional group that interacts with the electroless plating catalyst or precursor thereof is chemically bonded in the pattern form directly onto the polymerization initiating layer.

3. (currently amended): A method of forming a metal pattern, comprising the steps of: ~~The metal pattern forming method according to Claim 1, wherein the step (I) further comprises:~~
 - ~~a step (I-1-1) of forming on the~~ a substrate a polymer layer by using a compound ~~chemically bonding a polymer which has a polymerizable group and a functional group whose structure is changed to a structure that interacts with the electroless plating catalyst or precursor~~

thereof or loses the interaction capability with the electroless plating catalyst or precursor thereof, due to application heat, acid, or radiation; ~~and~~

~~a step (I-1-2) of forming, in the polymer layer in a pattern form, a so that the polymer layer in the pattern form that~~ interacts with the electroless plating catalyst or precursor thereof, due to application of heat, acid, or radiation to the polymer layer in the pattern form; and

(II) adding the electroless plating catalyst or precursor thereof to the polymer layer; and

(III) forming a metal layer in the pattern form by electroless plating.

4. (original): The metal pattern forming method according to Claim 3, wherein the substrate in the step (I-1-1) is a substrate having a polymerization initiating layer in which a polymer having, on a side chain thereof, a crosslinking group and a functional group having polymerization initiating capability is immobilized by a crosslinking reaction on a base material.

5. (currently amended): The metal pattern forming method according to Claim 1, wherein

the step (I) further comprises:

a step (I-2) of contacting a compound having a polymerizable group and a functional group that interacts with the electroless plating catalyst or precursor thereof with the substrate, irradiating the substrate with radiation in the pattern form, ~~chemically bonding the compound directly to the substrate,~~ and thus forming, in the pattern form, a polymer layer that interacts with the electroless plating catalyst or precursor thereof.

6. (original): The metal pattern forming method according to Claim 5, wherein the substrate in the step (I-2) is a substrate having a polymerization initiating layer in which a polymer having, on a side chain thereof, a crosslinking group and a functional group having polymerization initiating capability is immobilized by a crosslinking reaction on a base material.

7. (currently amended): The metal pattern forming method according to Claim 1, wherein the step (I) further comprises:

a step (I-3-1) of forming on a base material a photosensitive layer containing a light to heat conversion substance selected from the group consisting of a dye, a pigment, and a metal fine particle that have a maximum absorption wavelength in an energy exposure wavelength region of 760 to 1,200 nm, and a binder, and forming a polymer layer by using a compound chemically bonding a polymer having which has a polymerizable group and a functional group that interacts with an electroless plating catalyst or a precursor thereof directly onto the entire surface of the photosensitive layer; and

a step (I-3-2) of forming, in the pattern form, a polymer layer that interacts with the electroless plating catalyst or precursor thereof by irradiating the polymer layer with radiation in the pattern form and ablating the photosensitive layer.

8. (original): The metal pattern forming method according to Claim 7, wherein the photosensitive layer in the step (I-3-1) is a polymerization initiating layer in which a polymer having, on a side chain thereof, a crosslinking group and a functional group having polymerization initiating capability is immobilized on the base material by a crosslinking reaction.

9. (original): The metal pattern forming method according to Claim 1, further comprising a step of carrying out drying after the step (III).

10. (original): The metal pattern forming method according to Claim 1, further comprising a step (IV) of carrying out electroplating after the step (III).

11. (original): The metal pattern forming method according to Claim 10, further comprising a step of carrying out drying after the step (IV).

12. (original): The metal pattern forming method according to Claim 1, wherein the substrate is a substrate having a surface roughness of 500 nm or less.

13-19. (canceled)

20. (currently amended): A method of forming a conductive film, comprising the steps of:

(A) producing a substrate having a polymerization initiating layer in which a polymer having, on a side chain thereof, a crosslinking group and a functional group having polymerization initiating capability is immobilized by a crosslinking reaction on a base material;

(B) generating a graft polymer by using a compound ~~chemically bonding a polymer having which has a polymerizable group~~ and a functional group that interacts with an electroless plating catalyst or a precursor thereof directly onto the entire surface of the polymerization initiating layer;

(C) adding the electroless plating catalyst or precursor thereof to the graft polymer; and

(D) forming a metal layer by electroless plating.

21. (currently amended): ~~[[A]]~~The conductive film forming method according to Claim 20, wherein the step (B) further comprises:

a step (B-1) of generating an active site on the polymerization initiating layer by applying energy to the surface of the particular polymerization initiating layer after contacting a compound having a polymerizable group and a functional group that interacts with the electroless plating catalyst or precursor thereof with the polymerization initiating layer; and then generating, with the active site as a base point, a graft polymer having a functional group that interacts with the electroless plating catalyst or precursor thereof ~~and chemically bonding directly to~~ on the surface of the polymerization initiation layer.

22. (original): The conductive film forming method according to Claim 20, further comprising a step (E) of carrying out electroplating after the step (D).

23. (original): The conductive film forming method according to Claim 20 wherein the substrate is a substrate having a surface roughness of 500 nm or less.

24-25. (canceled)

26. (new): The metal pattern forming method according to Claim 1, wherein the functional group that interacts with an electroless plating catalyst or a precursor thereof is selected from the group consisting of a carboxyl group, a sulfate group, a phosphate group, an amino group or a salt thereof, a hydroxyl group, an amido group, a phosphine group, an imidazole group, a pyridine group or a salt thereof, or an ether group.

27. (new): The conductive film forming method according to Claim 20, wherein the functional group that interacts with the electroless plating catalyst or a precursor thereof is selected from the group consisting of a carboxyl group, a sulfate group, a phosphate group, an amino group or a salt thereof, a hydroxyl group, an amido group, a phosphine group, an imidazole group, a pyridine group or a salt thereof, or an ether group.

28. (new) The metal pattern forming method according to Claim 3, further comprising a step (IV) of carrying out electroplating after the step (III).

29. (new) The metal pattern forming method according to Claim 3, wherein the substrate is a substrate having a surface roughness of 500 nm or less.

30. (new): The metal pattern forming method according to Claim 3, wherein the functional group that interacts with an electroless plating catalyst or a precursor thereof is selected from the group consisting of a carboxyl group, a sulfate group, a phosphate group, an amino group or a salt thereof, a hydroxyl group, an amido group, a phosphine group, an imidazole group, a pyridine group or a salt thereof, or an ether group.

31. (new): The metal pattern forming method according to Claim 28, further comprising a step of carrying out drying after the step (IV).